NATURAL RESOURCES CONSERVATION SERVICE
PACIFIC BASIN AREA
CONSERVATION PRACTICE STANDARD

WASTE UTILIZATION

(Hectare, Acre)
CODE 633

DEFINITION

Using agricultural waste or other waste on land in an environmentally acceptable manner while maintaining or improving soil and plant resources.

PURPOSES

This practice is applied in whole or as part of a total waste management system to:

- Utilize agricultural wastes as a source of soil amendments for crop, forage, or fiber production;
- Utilize agricultural wastes to reduce commercial fertilizer needs and improve farming profitability;
- Use agricultural waste to improve soil tilth;
- Utilize agricultural wastes in a manner which safeguards human and animal health;
- Eliminate or minimize potential negative effects of waste utilization on soil, water, air and animal resources; and,
- Utilize other organic waste such as yard waste, treated municipal effluent and sewage sludge as a soil amendment and nutrient source.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies to cropland, pastureland and on soils and vegetation suitable for the use of waste as a nutrient source and/or soil amendment. This includes waste from farm sources, municipal treatment plants; and agricultural processing plants.

This standard does not apply to the disposal of waste products or effluents such as household garbage, chemical and pesticide rinsate, and landfill leachate.

DESIGN CRITERIA

General Criteria Applicable to all Purposes

Waste application to land must comply with all federal, state, or local laws and ordinances.

Apply wastes with calibrated application equipment or by known volumes.

Apply wastes at rates which do not exceed projected nitrogen (N), requirements of the target crop after considering the plant-available nitrogen in the manure, organic sources of nitrogen in the soil and other planned nitrogen sources such as commercial fertilizer, and legumes.

Base waste application rates on crop phosphorus needs on land within 300 feet (91 meters) of surface waters and drainage ditches, on fields with slopes greater than 10 percent, or where soil phosphorous levels exceed 50 PPM.

Do not apply organic waste on soil with phosphorous levels greater than 100 PPM if the waste source contains any measurable phosphorous.

Develop a nutrient management plan to guide waste application rates. Use criteria in the Pacific Basin standard, Nutrient Management (590), to develop the nutrient management plan. These criteria include soil testing, realistic yield goals, and plant nutrient requirements.

Annually update waste utilization plans when waste applications deviate from planned applications or when crop systems or yields differ significantly from those planned.

Keep yearly records of fields, annual application, rates, and amounts of nutrients considered available at those rates. Refer to applicable job sheets: "Step by Step Guide to

Nutrient Management" and "Farmstead Nutrient Use Summary Worksheet."

Do not apply liquid applications of wastes during a period of rainfall or at rates greater than the infiltration rate.

Apply waste during periods of the year when the probability of flooding is low on land classified as having moderate to severe flooding frequency.

Incorporate or inject wastes within 48 hours on land classified as frequently flooded or severe (50-100 times in 100 years).

Incorporate or inject wastes within 48 hours on land within 250 feet (76 meters) of active wells, sink holes, mines or quarries or, as required by local environmental regulations, whichever is greater.

Incorporate or inject wastes within 48 hours on land upslope and within 250 feet (76 meters) of surface water bodies. Incorporation can be delayed if a buffer area greater than 100 feet (32 meters) separates the field from the surface water and soil losses do not exceed 5 tons per acre per year (unless prohibited by local law).

Avoid Applications:

1. In grassed waterways, gullies and ditches and other areas of concentrated surface water runoff.
2. On land upslope from and within 100 feet (30 meters) of a quarry, well, sinkhole, un-bermed drainage ditch, and surface water.
3. Within 300 feet (91 meters) of surface waters (or as required by local environmental regulations) when soil tests identify high levels of Phosphorus.
4. To leafy vegetable crops or crops eaten raw.
5. On fields with slopes greater than ten percent or prone to soil erosion.

Additional Criteria where Target Crop is not Harvested or Removed from the Site

Application rates should be based on the plant available nitrogen, phosphorus or potassium need of the target cover, whichever need is lowest.

Liquid wastes should be spread in a manner which prevents runoff of the wastes during application.

Apply at times of the year when probability of flooding and runoff events are low and wildlife disturbance is minimized.

Conduct soil test once every five years as a minimum, to avoid phosphorouc loading of the soil.

Additional Criteria for the Application of Municipal Effluent or Sewage sludge

Refer to 40 CFR, part 257 before planning the application of municipal sewage waste (U.S. Regulations apply to U.S. Territories and Possessions, use as a guide in U.S.-Served "Compact" Countries). Always refer to local laws.

Waste analysis for heavy metal content and pH should be obtained for sludge products from municipal sources.

Municipal effluent and sludge products should not be applied to crops products directly consumed nor to soils used for the production of root crops.

Avoid the application of waste sludge or effluent from municipal treatment systems:

1. That do not meet permit operating requirements.
2. To fields that are used for the production of root crops.
3. To crops whose harvested parts are grown above ground and are grown for direct human consumption.

PLANNING CONSIDERATIONS

Consider producer time, labor and equipment capabilities when developing a waste utilization system and determining application rates.

Consider basing nutrient management plans on actual soil test and waste analysis.

Consider the crop rotation and loss of mineralized nitrogen during idle, fallow, or non-crop periods when planning application frequency and application rates.

Incorporate solid wastes as soon as possible after application to reduce nitrogen, phosphorus and potassium loss to the environment.

Consider the installation of erosion and runoff control measures on fields receiving waste applications where soil erosion is greater than 5 tons per acre per year (2.2 tonnes/Ha).

Consider the timing and quantity of waste applications so as not to injure growing plants.

Soil features and their combined effect on applied waste are important considerations when evaluating a site is suitable for the intended application. Consult Chapter 5, "Soil Characteristics" in the NRCS Agricultural Waste Management Field Handbook (AWMFH), 4/92 for guidance on these interactions.

Where possible, establish and maintain vegetated buffers around sensitive features. When possible, avoid waste applications in these areas.

Consider spreading at times of day and locations that minimize odor.

Consider the need for on-site storage facilities for instances where waste cannot be immediately applied.

WATER QUANTITY

Effect on the water budget, especially on volumes, and rates of runoff, and infiltration.

Variability of the practice's effects caused by seasonal weather variations.

Effects of increasing organic matter on water holding capacity of the soil.

Potential for a change in plant growth and transpiration because of changes in the volume of soil water.

WATER QUALITY

Effects on the movement of soluble and sediment-attached substance, sediment, organic material, and pathogens that could be carried by runoff.

The leaching potential of available nitrogen between crop seasons and the effects of nitrate leaching to groundwater.

Effects on the use and management of nutrients and resulting effects on surface and ground-water quality.

Effect of phosphorus runoff on nearby surface waters.

PLANS AND SPECIFICATIONS

Site specific waste utilization plans will be developed based on principles contained in this standard and in the NRCS - Pacific Basin standard, Nutrient Management (590). Waste utilization plans and specifications shall meet applicable environmental regulations and requirements of the local environmental protection agency or department and other local agencies.

OPERATION AND MAINTENANCE

The owner or operator shall be responsible for maintaining waste application equipment in good working operation including insuring that application equipment is regularly calibrated.

Application rates should not exceed those specified in the nutrient management plan.

Maintain conservation practices and conduct tillage operations designed to reduce soil erosion.

REFERENCE SOURCES:

1. Agricultural Waste Management Field Handbook (AWMFH)
2. Engineering Field Handbook, Chapter 15 Section 11 of Field Office Technical Guide National Planning Procedure Handbook Ohio Engineering Computer Program
3. Soil Survey Soil Interpretation Record (found within 3SD, State Soil Survey Database)
4. Soil Test Results
5. Manure Analysis Results